

DOCUMENT RESUME

ED 196 947

TM 810 070

AUTHOR Goldman, Jerrold: Hsia, Jayjia
TITLE Test Score Decline Among High Achievers: Policy Implications.
PUB DATE Nov 80
NOTE 15p.: Paper presented at the Annual Meeting of the Evaluation Research Society (Washington, DC, November 19-22, 1980).
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *College Entrance Examinations: *Educational Policy: Elementary Secondary Education: *High Achievement: Higher Education: Policy Formation
IDENTIFIERS *Test Score Decline

ABSTRACT

Since 1967, the mean Scholastic Aptitude Test (SAT) score has declined. Likewise, the numbers of candidates receiving high SAT scores have been decreasing steadily. The same downward trend in student achievement can be seen among student groups from grade 4 through post graduate studies. In recent years, policy has been directed towards making services accessible to the less well endowed segments of society and has allotted a mere trickle to serve the academically or otherwise gifted. In addition, market forces have worked cyclically to influence the supply of trained talent in the arts, humanities, sciences, and professions. The fields of medicine, law, and technology have always been viewed as having a higher "payoff," and the numbers of test takers receiving high scores on entrance examinations to these highly competitive fields have actually increased. Some implications include: (1) colleges and universities are going to be faced with some hard choices concerning their standards; (2) guidance counseling in the elementary and secondary grades must help students choose challenging curricula in all areas; (3) policies that determine the allocation of financial aid should be re-examined; and (4) policies that determine the kinds of professions that are valued most must be adjusted. (RL)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

ED196947

TEST SCORE DECLINE AMONG HIGH ACHIEVERS:

POLICY IMPLICATIONS

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

Jerrold Goldman, Educational Testing Service

Jayjia Hsia, Educational Testing Service

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

J. Goldman

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

Paper presented at the
Annual Meeting of the Evaluation Research Society
Washington, D.C.: November 19-22, 1980

TEST SCORE DECLINE AMONG HIGH ACHIEVERS: POLICY IMPLICATIONS

In 1980, college-bound seniors' SAT score averages dipped a little more. Since 1967, the mean Verbal score has dropped 42 points from 466 to 424, and the mean Mathematics score, 26 points from 492 to 466. The concern over the downward trend of mean SAT scores and the spate of studies that have explored this phenomenon have obscured an equally alarming parallel trend: the numbers of candidates receiving high SAT scores have been decreasing steadily. Furthermore, college-bound high school seniors are not the only important group of American youths who have shown an apparent loss of interest in the pursuit of excellence. The same downward trend in student achievement and academic aptitude performance can be seen among student groups from grade four onward through post graduate studies. What are these observed trends of academic performance? And are there educational and societal factors which appear to be associated with these trends?

There has been in American history recurrent bouts of anti-intellectualism. In recent years, policy has been directed towards making services accessible to the less well endowed segments of society. The federal government, and the states in turn, have devoted substantial resources to the handicapped, the economically deprived, and the educationally disadvantaged. But the public sector has allotted a mere trickle to serve the sizeable populations of the academically or otherwise gifted, while foundations and other private sources have limited means for promoting excellence. In addition, market forces--the demand for highly schooled manpower--have worked cyclically to influence the supply of trained talent in the arts, humanities, sciences and professions. Finally, the Vietnam war and consequent alienation of youth have channeled the energies of some of our most gifted young people to pursuits other than continuing academic studies. Let us examine each of these factors in turn.

HIGH-SCORER DECLINE

There are several sources that do an excellent and thorough job of discussing the data concerning the general decline (e.g. Harnischfeger and Wiley (1975), Armbruster (1977), On Further Examination (1977), Copperman (1978)). While some of these mention the problem of high scorers, none pay particular attention to it.

College Admissions Tests. As one might expect, the test for which the most data exist is the SAT. The downward trend is exhibited for college-bound high school seniors in Figure 1 (verbal) and Figure 2 (mathematics). It can be seen that the percentage of students scoring above 600 on the verbal portion of the SAT has declined from almost 11.4 percent to 7.2 percent (the absolute number of 600+ scorers declined 39% during this time, from 116,630 in 1972 to 71,363 in 1980). As with the general score decline, the drop is not as severe on the mathematics portion of the SAT. Nonetheless, Figure 2 indicates

that the percent above 600 has declined from about 17.9 percent to 15.1 percent (this reflects an absolute drop of 18% from 182,601 to 149,615). The percentage of high scorers has dropped very steadily despite fluctuations in the total number of collage-bound seniors taking the SAT. Looking only at the 1972 and 1980 figures, there was a drop of only 3% in the numbers of test-takers.

Similar results have been found for the other widely-used college admissions test--the ACT. While the percentage of high scores has remained relatively constant, the number of students getting high composite scores (the ACT consists of four subtests: English, Social Studies, Natural Science and Mathematics) has declined in recent years. The greatest decline is in the Social Studies subtest. It should be noted that this subtest correlates more highly with the SAT verbal test than do any of the other ACT subtests.

Elementary and secondary school achievement tests. Data for the elementary and secondary school level generally take two forms. The first are renorming studies that were done for several of the major achievement tests; the second are state specific studies of student performance over time on state-mandated tests.

Virtually all renorming studies have found an average decline for all grades above the primary level. These studies also tend to show that the decline is worse as one looks at successively higher grades (Armbruster, 1977). The available data does not, unfortunately, provide much insight to the high scorer issue. Exceptions are the renorming studies done for the Iowa Tests of Basic Skills (ITBS). The 1971 renorming revealed that the average score for the 90th percentile students declined more than did scores for students in the lower percentiles. This was especially true at the upper grade levels (grades 6, 7 and 8). The 1977 renorming yielded similar results. Once again, the greatest losses (this time fourth and eighth grades were studied) were at the 90th percentile. It is also interesting to note that the losses were greatest in the Language Usage subtest. This result may be considered analogous to the decline on the SAT verbal test. That is, it is in tests measuring verbal abilities, as opposed to mathematical ones, where the most severe declines are occurring.

Of the studies of statewide testing, the most relevant is that of the Minnesota Scholastic Aptitude Test (MSAT), which is given annually to high school juniors. It was found that the proportion of high scorers declined from 1967 to 1972 (Swanson, 1973). In addition, Armbruster (1977) reports data on statewide testing in California. He found that for sixth-graders (tested with the Comprehensive Tests of Basic Skills) and twelfth-graders (tested with the Iowa Tests of Educational Development), the scores of students scoring at the 75th percentile were falling faster than those of students at the 25th percentile.

Graduate and professional school admissions tests. The final area for which data are available is that of admissions tests for graduate and professional schools. One study revealed that the proportion of students scoring above a "critical score" (defined as the score corresponding to the 85th percentile in the year 1974-75) has declined since the late 1960's for the Graduate Record Examinations (GRE), and the Graduate Management Admissions Test (GMAT) (see Figure 3). The reverse trend is found for the Law School Admissions Test (LSAT), however (Stupak, 1979).

FACTORS ASSOCIATED WITH THE DECLINE

When the disturbing trend in the test scores first drew the attention of the education community, researchers began investigating various background variables in an effort to identify factors that were associated with the decline. Changes in the societal, educational, and occupational environments were all examined, as were changes in the tests themselves. While no casual inferences are yet possible, a number of plausible hypotheses have been advanced. These hypothesized explanations focus on factors that may, singly or in combination, account for part of the decline.

When considering specific factors that have been suggested as being associated with the decline among high scorers, one must first determine whether the factors are peculiar to the high achieving group, or are the same as those suggested for the population as a whole. Or, is it a combination of both? Our contention is that there is no reason to expect the high achievers to be immune to the many factors that may be contributing to the general decline, and therefore we believe that both kinds of explanations are plausible.

The general explanations have been carefully considered in the references mentioned earlier. They fall into one of two categories: changes in the tests, and changes in the ability of the students taking the tests. (There is a third category - changes in the composition of the population taking the tests. It has been shown that in the 1960's, more students from traditionally lower-achieving groups began taking tests such as the SAT. This argument, while important for explaining a decline in the average score, is less significant when one focuses on decreasing numbers of high scorers.)

With regard to the tests themselves, it has been shown that they tend to be constructed, scaled and equated using the most sophisticated techniques available, and that they are as valid as they ever were. It is unlikely that the tests are the cause of the decline.

The second category of general explanations deal with the theory that the ability of students, at all levels, has declined. Changes in various environmental factors have been examined as possible causes. Briefly, these include:

1. Changes in the family (more single-parent families, more working mothers, more permissive, lower expectations, "baby-boom" related problems..)
2. Changes in the school (permissiveness, absenteeism, less discipline, lower standards, curricular changes, too many electives, easier textbooks, automatic promotions, lazy teachers, etc.)
3. Changes in society and culture (Vietnam, women's movement, disillusionment and disaffiliation, drugs, sex, and television.)

The above explanations treat the student as a reactive being - as an individual who passively responds to the changes taking place in the environment. Equally plausible alternative hypotheses think of the student as an intelligent, decisionmaking being, who chooses the most favorable path of behavior based upon a careful consideration of environmental conditions, and of the potential rewards and risks of failure associated with each potential course of action. In this perspective, the student is not merely acted upon by the environment, but instead interacts with the surroundings, so that interest and attitude changes result from a reflective, not a reflexive, response to environmental changes. This may be especially true for high ability students, who have a wider range of opportunities from which to choose.

There are two categories of these alternative hypotheses. The first says that there are fewer high scorers now than there were formerly simply because fewer students from the potentially high scoring group choose to take the tests (note that this explanation applies only to the admissions tests, not to elementary and secondary school achievement tests). There is, for example, evidence suggesting that fewer high ability students are entering four year colleges (Peng, 1977). For these students, a college education may appear less important for the future. It is difficult to say exactly what these students are doing in lieu of attending college, but their goals are apparently leading them elsewhere.

The notion that fewer high scoring students are taking admissions tests is also supported to some degree by Jackson (1976). He found that fewer students are taking both the SAT and the ACT. This may reflect changes both in the students' choices for college and in the admissions requirements of the colleges.

The second category of hypothesized explanations are premised on the theory that performance on a test is a joint function of ability and motivation. These explanations assume that there are as many high ability students as before, but that they are less motivated to do well on the tests. The decline in motivation may have numerous causes, including: (1) less is demanded of these students by teachers and parents; (2) high scores on tests are not instrumental for later success; (3) there is less competition for college due to an increase in available spaces, and to open admissions at many colleges; and (4) college has become very expensive, and students may no longer believe that it will result in higher earnings in the future.

It is important to note that increases in test scores and in numbers of high scorers on the LSAT and on GRE-Advanced tests in the sciences may indicate support for this explanation. The fields of medicine* and law, and the technological fields have always been viewed as having a higher "payoff," and

*Data focusing on numbers of high scorers on the Medical College Admissions Test (MCAT) were not examined. However, The Condition of Education (1977) reports that the average score for the MCAT has remained fairly stable over time on the verbal portion, and increased slightly for the quantitative subtest. It may be reasonable to assume that the data on high scorers would resemble that of the LSAT.

a greater opportunity for personal development in a challenging occupation. They are, therefore, characterized by heightened competition for admissions, which can be a great incentive to perform well on admissions test. Figure 4 contains data relevant to this argument. This graph shows the average score for the 90th percentile group on various GRE-Advanced tests. It can be seen in the non-science fields (e.g., history, sociology, political science, education), the average score is dropping over time. For the science and technology fields (chemistry, biology, engineering), the average score is fairly stable or perhaps increasing a little.

The fact that the total number of students taking the non-science tests has been steadily dropping while the numbers taking the science tests have either increased or remained stable, rules out certain explanations for the score changes. For example, it cannot be said that the drop in the average score on the non-science tests is due to an influx of low achieving students taking the test, since in fact the total number of test-takers is dropping. Clearly, there must be fewer high scorers.

Indirect evidence for the incentive provided by competition may be found in an examination of the effects of the new test disclosure laws. Of all the major tests, the highest percentage of test-takers requesting copies of the test forms is on the LSAT (Educational Testing Service, 1980). For the SAT, while the total percentage of requests is low, the average score of the group requesting copies is significantly higher than the average score for those not making the request (Hanford, 1980). If a desire to examine the tests after taking them is any indication of the competitive spirit of the students, it appears as if competition is a motivational factor in the achievement of high scores.

IMPLICATIONS

The fact that the decline of the "cream of the crop" has not received continuing attention is significant in itself. Policymakers who focus only on average and below-average students when considering changes in curriculum, organization, or financing may be inadvertently perpetuating the problem. The communication gap between the producers and users of such data needs to be narrowed, and present policies deserve reassessment.

When considering the policy implications of the decline, it is helpful to impose some structure. We suggest a model in which three dimensions may be considered jointly. The first dimension focuses on the institution, and concerns the scale of the impact on colleges. One can look at the implications for a single college, a class of colleges, or for the entire college system.

The second dimension looks at the students, and is concerned with the extent to which an individual is seen as a proactive decisionmaker who is in control of his or her choices, or as a passive, reactive being, whose behavior is controlled by environmental changes.

The final dimension deals with the policymaker, and focuses on the mode of responding to the problems associated with the decline. We can be reactive, and simply accommodate our colleges and ourselves to a population of less able individuals; or we can be aggressive in our response, and introduce policies designed to inhibit and reverse the decline.

Keeping this framework in mind, consider some of the implications. One obvious implication is that colleges and universities are going to be faced with some hard choices concerning their standards. The moderately selective schools especially will find the competition for good scholars getting more intense because of the smaller pool of applicants of this caliber. In general, these schools may be forced to lower their standards for admission (and probably water down their instruction as well), or maintain their standards and risk going out of existence due to declining enrollments. A third possibility may be to accept more under-qualified individuals, but maintain high performance standards by providing intensive remediation to incoming students. This may, unfortunately, result in a higher dropout rate.

Another implication concerns our approach to the guidance and counseling of students, especially in the elementary and secondary grades. Guidance must start when the student is just old enough to begin to take charge of his or her own educational program; it must be early enough in the student's schooling that a sense of control can be engendered. Counselors must help students choose challenging curricula in all areas in order to ensure the development of talent in fields that are presently less able to attract an abundance of high achievers.

The implications just discussed may be the only ones that are independent of the hypothesized causes of the decline. If, in fact, there are fewer high-scoring students, then colleges will need to adjust. This adjustment will be necessary regardless of the reasons for the decline. The implications to be discussed below imply certain underlying causes. Since we do not know which of the many plausible explanations are the correct ones, we may have to reconsider policies in several areas at once.

One such area of concern is compensatory education at the elementary and high school level. Armbruster (1977) suggests that it appears as if we may have lowered the standards and achievement levels for all students by focusing the money and attention on the disadvantaged. In doing so we may have done a disservice to all. Rather than help only the bottom students, possibly at the expense of the top ones, we should try to raise all groups. Students at the upper end of the distribution deserve more attention, and policies that determine the allocation of funds should be re-examined with an eye toward redistributing financial aid. The slight rise in the federal government's concern and support for the gifted and talented programs indicates that we may already have taken a step in that direction. At the same time, however, policy changes in this area cannot disregard national goals for equity and equal educational opportunity.

We must also monitor the policies that control the reward structure of our society. If only doctors, lawyers and sophisticated electronics technicians are valued, we cannot expect high ability students to pursue other careers with equal vigor. If we cannot motivate students who are interested in other areas of study to develop their skills as much as pre-law and pre-med students have done, we may have to encourage some of the latter groups to consider alternate career goals.

The market forces that influence a student's career choice do so through the individual's rational process of decisionmaking. Students choose to pursue one career rather than another based upon their interests and desires, and upon the perceived challenge or rewards of the career. Evidence of the impact of the market forces may be seen in several areas. We have already seen that GRE-Advanced tests in the sciences are exhibiting stable or rising score trends. Apparently large numbers of high scoring students continue to believe that these fields offer ample opportunities for personal fulfillment. Another hypothesis is that there are many high scorers who, having failed to gain admission to medical school due to the limited number of available spaces, are now pursuing alternate paths into medicine.

The effect of the market forces may also be seen in the decline in the number of high scorers on the advanced test in education. The surplus of teachers and an educational system that is seen as having fewer rewards and more frustrations have combined to produce a situation in which fewer highly able students are entering the profession. When one considers that the quality of the future education of our youth depends in part on the quality of the teachers, one quickly sees the serious implications of this progressive decline.

Another area in which market forces may be having a strong impact is the management field. There is some evidence that as entry to certain professions (for example, the legal profession) becomes more competitive, and as the management field becomes more lucrative, students may be shifting their career goals from one to the other.

Just as students may be deciding their courses of study based upon the market forces, so too are they choosing when to end their schooling, or whether to attend school at all. For example, there is evidence that whereas the engineering field is still able to attract high ability students, there are increasing numbers of students who are entering the job market with only a bachelors degree. When faced with a choice between graduate education and a job, many have decided that the latter is the better path to follow. This decision is made possible by a market in which employees are forced to keep up with the demand for engineers by recruiting students below the graduate school level.

The hypothesis that fewer high ability students are applying to college is also relevant here. Many students may find that the market now offers excellent opportunities to those without a college degree. Colleges may have to adopt marketing strategies in order to attract students who planned to skip college altogether.

Students are rational beings who make rational decisions about their career goals, based in part upon their perceived chances for success and fulfillment in the job market. Policies that affect the market forces and determine the kinds of professions that we value most, must be adjusted to reflect our need to have highly skilled individuals in all fields.

Finally, it may be time for policies that control the curricula and standards in our schools to be reconsidered. Many critics argue that the student-directed, cafeteria-style curriculum and the lowering of standards in schools are the major causes of the test-score decline. The latter may be especially damaging for the high ability students, who may not be sufficiently challenged to achieve their potential. Policies designed to reverse that trend need to be instituted. One interesting approach has been suggested by Postman (1979), who takes a "thermostatic" view of education. He argues that education must provide what our electronic information environment (dominated by television) fails to provide. Education should not reflect the current biases of society and culture, but instead should oppose these biases, and provide balance by teaching skills that the culture suppresses. For example, since television and the telephone have reduced the exercise of our reading and writing abilities, schools must take up the slack. If less reading and writing is demanded in schools, or if the standards for quality are lowered, then schools are reinforcing the biases of the environment. The available evidence indicates that it is the verbal skills of students at all levels of schooling that are suffering the most.

Some changes designed to reverse this trend have been introduced, and have reported positive, measurable effects. The many private, basic skills academies that have opened are examples of these changes. So, too, is the Study of Mathematically Precocious Youth (SMPY) project directed by Julian Stanley at Johns Hopkins University. These kinds of programs are usually experimental in nature, and enroll a small number of students. Similar changes must be introduced on a wider scale.

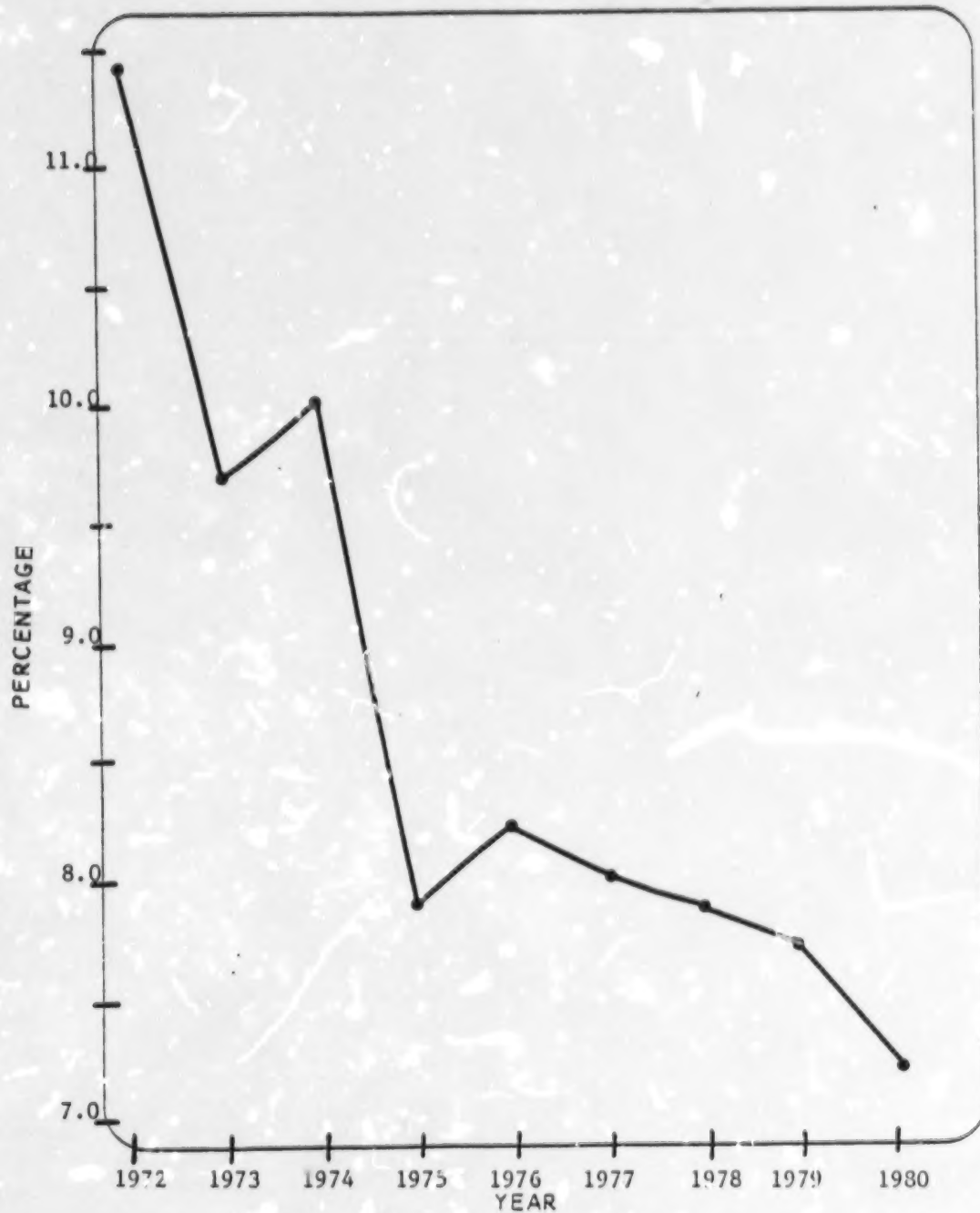
Regardless of the reasons for the decline of the "cream of the crop", it is clear that a continued decline will lead to increased "mediocritization" of society, with potentially serious consequences for leadership and productivity. Society must be willing to reward excellence, both in school and on the job, if we hope to have continued progress, and to maintain our leadership position at the frontiers of human knowledge.

REFERENCES

1. Armbruster, F. E. Our Children's Crippled Future. New York: Quadrangle (the New York Times Book Company, 1977).
2. The Condition of Education. Washington, D.C.: National Center for Education Statistics, 1977.
3. Copperman, P. The Literacy Hoax. New York: William Morrow and Co., 1978.
4. Educational Testing Service, Unpublished Report, Princeton, New Jersey, 1980.
5. Hanford, G. Press release and background paper on the New York State experience. New York, College Entrance Examination Board, September, 1980.
6. Harnischfeger, A. and Wiley, D. E. Achievement Test Score Decline: Do We Need to Worry? Chicago: CEMREL, Inc., 1975.
7. Jackson, R. An Examination of Declining Numbers of High-Scoring SAT Candidates. New York: College Entrance Examination Board, 1977.
8. Munday, L. Declining Admissions Test Scores. (American College Testing Program Research Report Number 71) Iowa City, Iowa: American College Testing Program, 1976.
9. On Further Examination: Report of the Advisory Board on the Scholastic Aptitude Test Score Decline. New York: College Entrance Examination Board, 1977.
10. Peng, S. S. Trends in the entry to Higher Education: 1961-1972 Educational Researcher, 1977, 6, 15-18.
11. Postman, N. Teaching as a Conserving Activity. New York: Delacorte Press, 1979.
12. Stupak, S. Personal communication, November, 1980.
13. Swanson, E.O. Fashions in Test Scores. Minneapolis, MN. University of Minnesota, Student Counseling Bureau Review, 1973.

FIGURE 1

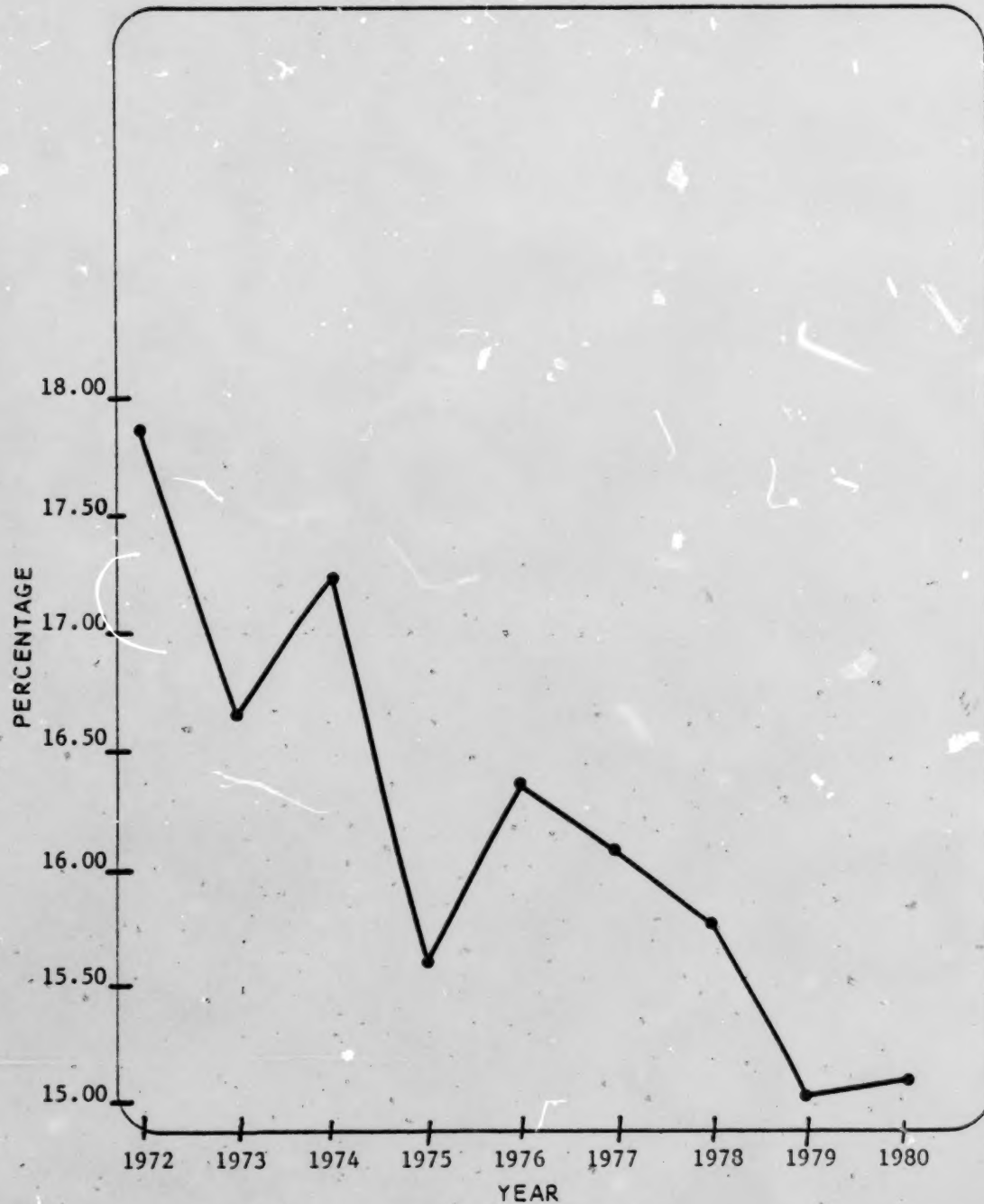
PERCENTAGE OF COLLEGE-BOUND SENIORS
WHO SCORED AT OR ABOVE 600
ON THE SAT VERBAL SUBTEST,
1972-1980.



SOURCE: College-bound Seniors (1971-2, 1972-3, 1973-4, 1974-5, 1975-6, 1977, 1978, 1979, 1980) New York: College Entrance Examination Board.

FIGURE 2

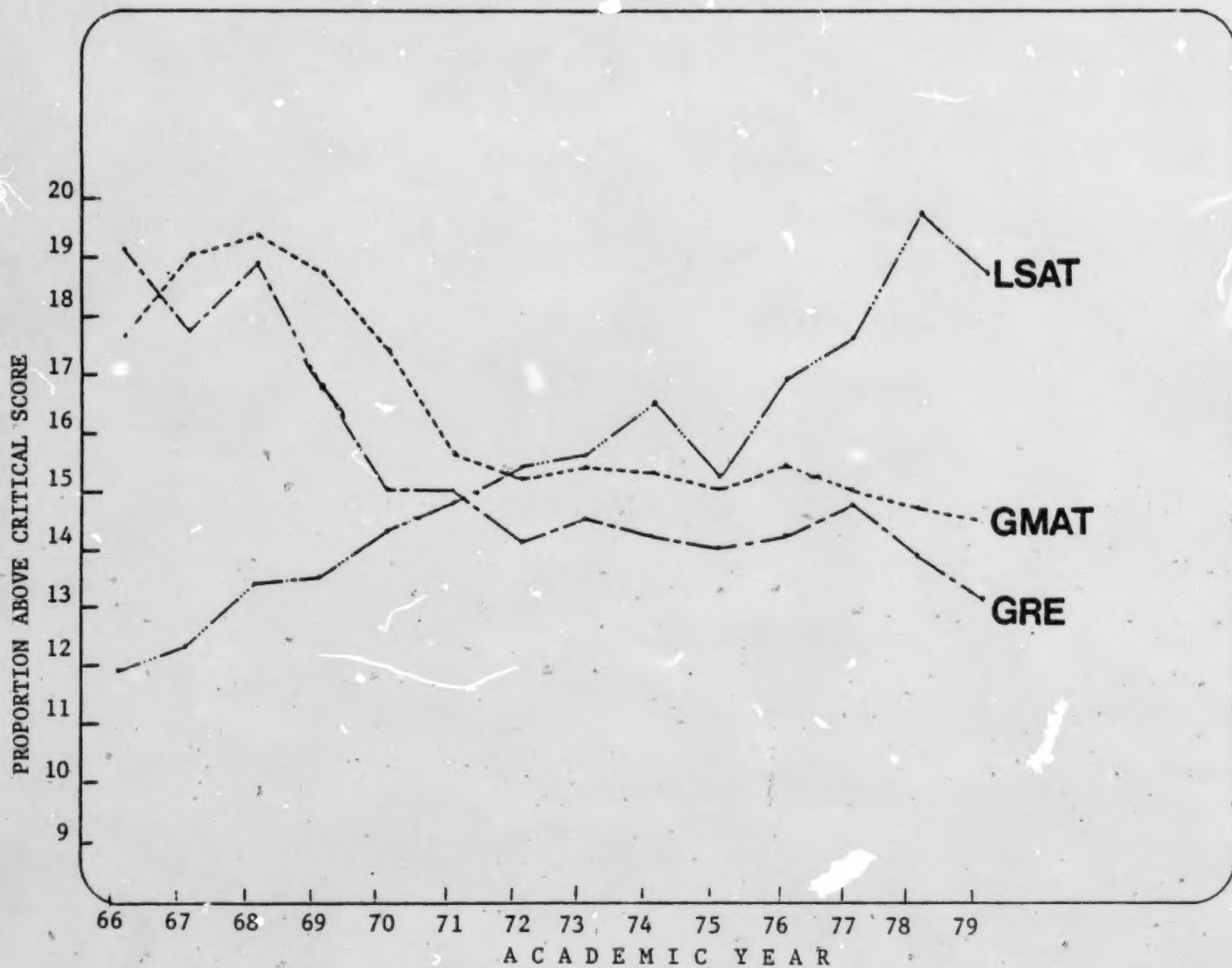
PERCENTAGE OF COLLEGE-BOUND SENIORS
WHO SCORED AT OR ABOVE 600 ON THE
SAT MATHEMATICS SUBTEST
1972-1980.



SOURCE: College-Bound Seniors (1971-2, 1972-3, 1973-4, 1974-5, 1975-6, 1977, 1978, 1979, 1980) New York: College Entrance Examination Board.

FIGURE 3

PROPORTION OF STUDENTS SCORING ABOVE CRITICAL SCORE*
ON THE GRE, LSAT, AND GMAT, 1966-1979

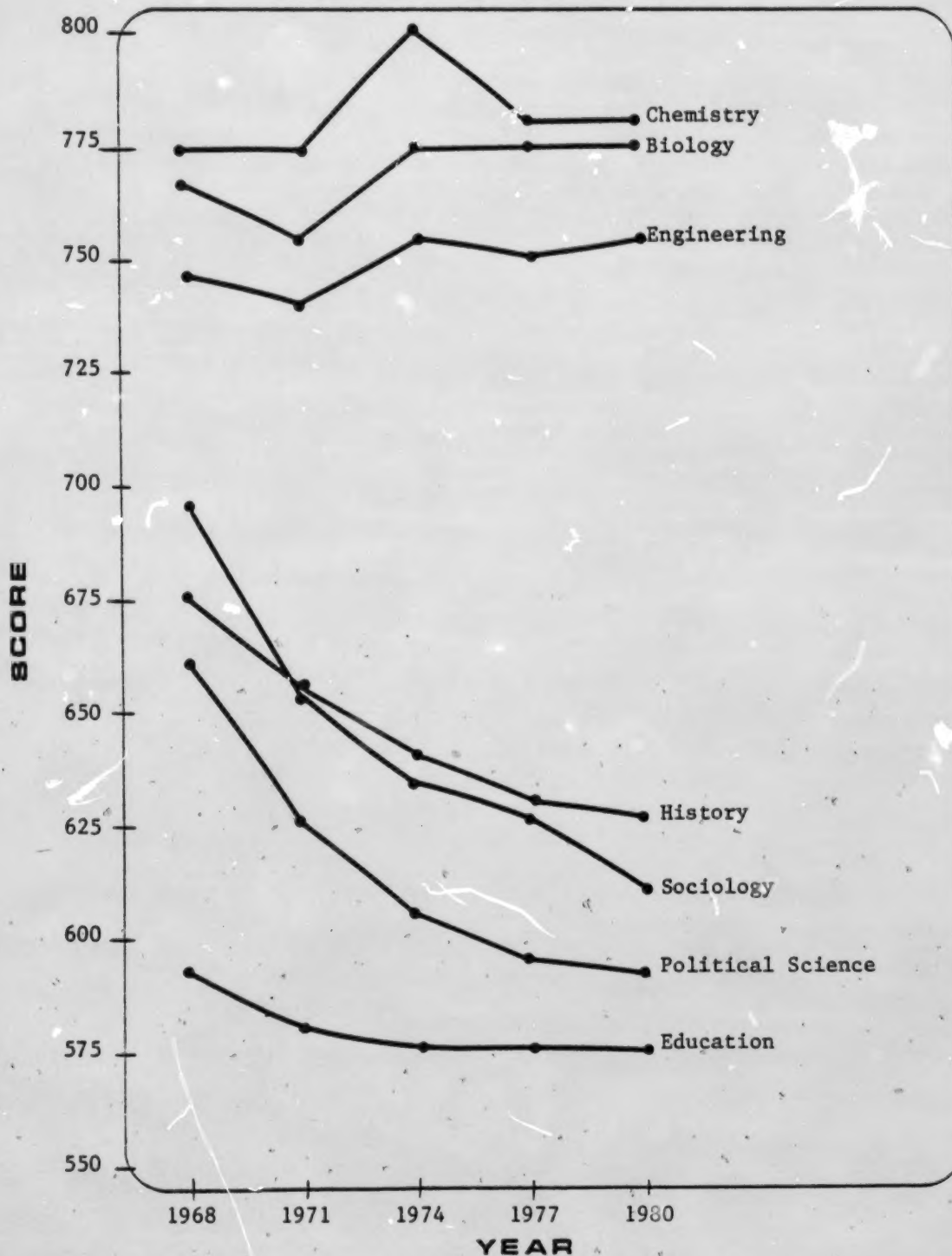


*CRITICAL SCORE IS DEFINED AS THE SCORE EQUIVALENT TO THE 85TH PERCENTILE FOR THE YEAR 1974-75.

SOURCE: S. Stupak, personal communication, November, 1980.

FIGURE 4

AVERAGE SCORE OF STUDENTS SCORING AT THE 90TH PERCENTILE
ON GRE ADVANCED TESTS, 1968-1980*



*THESE FIGURES REPRESENT NORMATIVE DATA BASED ON THREE YEAR ROLLING AVERAGES. FOR EXAMPLE, THE 1968 FIGURES ARE BASED ON THE PERFORMANCE OF STUDENTS WHO TOOK THE TESTS BETWEEN MAY 1965 AND APRIL 1968.